

# SEQUENCE LISTING

<110> Bristol-Myers Squibb Company

<120> A NOVEL HUMAN LEUCINE-RICH REPEAT CONTAINING PROTEIN EXPRESSED  
PREDOMINATELY IN NERVOUS SYSTEM TISSUES, HLRNS1

<130> D0085.np

<150> US 60/259,479

<151> 2001-01-03

<150> US 60/260,616

<151> 2001-01-09

<160> 63

<170> PatentIn version 3.0

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Arg Glu Leu Trp Leu Arg Asn Asn Pro Ile Glu Ser Ile Pro Ser Tyr  
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Ala Phe Asn Arg Val Pro Ser Leu Arg Arg Leu Asp Leu Gly Glu Leu  
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Lys Arg Leu Glu Tyr Ile Ser Glu Ala Ala Phe Glu Gly Leu Val Asn  
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Leu Arg Tyr Leu Asn Leu Gly Met Cys Asn Leu Lys Asp Ile Pro Asn  
210 215 220

Leu Thr Ala Leu Val Arg Leu Glu Glu Leu Glu Ser Gly Asn Arg  
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Leu Asp Leu Ile Arg Pro Gly Ser Phe Gln Gly Leu Thr Ser Leu Arg  
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Phe Asp Asp Leu Lys Ser Leu Glu Glu Leu Asn Leu Ser His Asn Asn  
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Leu Met Ser Leu Pro His Asp Leu Phe Thr Pro Leu His Arg Leu Glu  
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Arg Val His Leu Asn His Asn Pro Trp His Cys Asn Cys Asp Val Leu  
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Trp Leu Ser Trp Trp Leu Lys Glu Thr Val Pro Ser Asn Thr Thr Cys  
325 330 335

Cys Ala Arg Cys His Ala Pro Ala Gly Leu Lys Gly Arg Tyr Ile Gly  
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Glu Leu Asp Gln Ser His Phe Thr Cys Tyr Ala Pro Val Ile Val Glu  
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Leu Gln Leu Leu Val Val Ala Gly Leu Val Arg Ala Gln Thr Cys Pro  
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Ser Val Cys Ser Cys Ser Asn Gln Phe Ser Lys Val Ile Cys Val Arg  
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Lys Asn Leu Arg Glu Val Pro Asp Gly Ile Ser Thr Asn Thr Arg Leu  
65 70 75 80

Leu Asn Leu His Glu Asn Gln Ile Gln Ile Ile Lys Val Asn Ser Phe  
85 90 95

Lys His Leu Arg His Leu Glu Ile Leu Gln Leu Ser Arg Asn His Ile  
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Arg Thr Ile Glu Ile Gly Ala Phe Asn Gly Leu Ala Asn Leu Asn Thr  
115 120 125

Leu Glu Leu Phe Asp Asn Arg Leu Thr Thr Ile Pro Asn Gly Ala Phe  
130 135 140

Val Tyr Leu Ser Lys Leu Lys Glu Leu Trp Leu Arg Asn Asn Pro Ile  
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Glu Ser Ile Pro Ser Tyr Ala Phe Asn Arg Ile Pro Ser Leu Arg Arg  
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Leu Asp Leu Gly Glu Leu Lys Arg Leu Ser Tyr Ile Ser Glu Gly Ala  
180 185 190

Phe Glu Gly Leu Ser Asn Leu Arg Tyr Leu Asn Leu Ala Met Cys Asn  
195 200 205

Leu Arg Glu Ile Pro Asn Leu Thr Pro Leu Ile Lys Leu Asp Glu Leu  
210 215 220

Asp Leu Ser Gly Asn His Leu Ser Ala Ile Arg Pro Gly Ser Phe Gln  
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Gly Leu Met His Leu Gln Lys Leu Trp Met Ile Gln Ser Gln Ile Gln  
245 250 255

Val Ile Glu Arg Asn Ala Phe Asp Asn Leu Gln Ser Leu Val Glu Ile  
260 265 270

Asn Leu Ala His Asn Asn Leu Thr Leu Leu Pro His Asp Leu Phe Thr  
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Pro Leu His His Leu Glu Arg Ile His Leu His His Asn Pro Trp Asn  
290 295 300

Cys Asn Cys Asp Ile Leu Trp Leu Ser Trp Trp Ile Lys Asp Met Ala  
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Pro Ser Asn Thr Ala Cys Cys Ala Arg Cys Asn Thr Pro Pro Asn Leu  
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Lys Gly Arg Tyr Ile Gly Glu Leu Asp Gln Asn Tyr Phe Thr Cys Tyr  
340 345 350

Ala Pro Val Ile Val Glu Pro Pro Ala Asp Leu Asn Val Thr Glu Gly  
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Met Ala Ala Glu Leu Lys Cys Arg Ala Ser Thr Ser Leu Thr Ser Val  
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Ser Trp Ile Thr Pro Asn Gly Thr Val Met Thr His Gly Ala Tyr Lys  
385 390 395 400

Val Arg Ile Ala Val Leu Ser Asp Gly Thr Leu Asn Phe Thr Asn Val  
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Thr Val Gln Asp Thr Gly Met Tyr Thr Cys Met Val Ser Asn Ser Val  
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Val Val Asp Trp Glu Thr Thr Asn Val Thr Thr Ser Leu Thr Pro Gln  
485 490 495

Ser Thr Arg Ser Thr Glu Lys Thr Phe Thr Ile Pro Val Thr Asp Ile  
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Asn Ser Gly Ile Pro Gly Ile Asp Glu Val Met Lys Thr Thr Lys Ile  
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Ile Ile Gly Cys Phe Val Ala Ile Thr Leu Met Ala Ala Val Met Leu  
530 535 540

Val Ile Phe Tyr Lys Met Arg Lys Gln His His Arg Gln Asn His His  
545 550 555 560

Ala Pro Thr Arg Thr Val Glu Ile Ile Asn Val Asp Asp Glu Ile Thr



565

570

575

Gly Asp Thr Pro Met Glu Ser His Leu Pro Met Pro Ala Ile Glu His  
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Glu His Leu Asn His Tyr Asn Ser Tyr Lys Ser Pro Phe Asn His Thr  
595 600 605

Thr Thr Val Asn Thr Ile Asn Ser Ile His Ser Ser Val His Glu Pro  
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<213> Bos taurus

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Ser Asp Leu Gln His Val Ile Cys Asp Lys Val Gly Leu Gln Lys Ile  
35 40 45

Pro Lys Val Ser Glu Lys Thr Lys Leu Leu Asn Leu Gln Arg Asn Asn  
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Phe Pro Val Leu Ala Thr Asn Ser Phe Arg Ala Met Pro Asn Leu Val  
65 70 75 80

Ser Leu His Leu Gln His Cys Gln Ile Arg Glu Val Ala Ala Gly Ala  
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Phe Arg Gly Leu Lys Gln Leu Ile Tyr Leu Tyr Leu Ser His Asn Asp  
100 105 110

Ile Arg Val Leu Arg Ala Gly Ala Phe Asp Asp Leu Thr Glu Leu Thr  
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Tyr Leu Tyr Leu Asp His Asn Lys Val Thr Glu Leu Pro Arg Gly Leu  
130 135 140

Leu Ser Pro Leu Val Asn Leu Phe Ile Leu Gln Leu Asn Asn Asn Lys  
145 150 155 160

Ile Arg Glu Leu Arg Ser Gly Ala Phe Gln Gly Ala Lys Asp Leu Arg  
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Trp Leu Tyr Leu Ser Glu Asn Ser Leu Ser Ser Leu Gln Pro Gly Ala  
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Leu Asp Asp Val Glu Asn Leu Ala Lys Phe Tyr Leu Asp Arg Asn Gln  
195 200 205

Leu Ser Ser Tyr Pro Ser Ala Ala Leu Ser Lys Leu Arg Val Val Glu

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Glu Leu Lys Leu Ser His Asn Pro Leu Lys Ser Ile Pro Asp Asn Ala  
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Phe Gln Ser Phe Gly Arg Tyr Leu Glu Thr Leu Trp Leu Asp Asn Thr  
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Asn Leu Glu Lys Phe Ser Asp Gly Ala Phe Leu Gly Val Thr Thr Leu  
260 265 270

Lys His Val His Leu Glu Asn Asn Arg Leu His Gln Leu Pro Ser Asn  
275 280 285

Phe Pro Phe Asp Ser Leu Glu Thr Leu Thr Leu Thr Asn Asn Pro Trp  
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Lys Cys Thr Cys Gln Leu Arg Gly Leu Arg Arg Trp Leu Glu Ala Lys  
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Thr Ser Arg Pro Asp Ala Thr Cys Ala Ser Pro Ala Lys Phe Arg Gly  
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Ser Cys Ser Gly Ser Thr Val Asp Cys His Gly Leu Ala Leu Arg Ile  
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Val Pro Arg Asn Ile Pro Arg Asn Thr Glu Arg Leu Asp Leu Asn Gly  
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Asn Asn Ile Thr Arg Ile Thr Lys Thr Asp Phe Ala Gly Leu Arg His  
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Leu Arg Ile Leu Gln Leu Met Glu Asn Lys Ile Ser Thr Ile Glu Arg  
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Gly Ala Phe His Asp Leu Lys Glu Leu Glu Arg Leu Arg Leu Asn Arg  
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Ala	Ser	Phe 195	Asn	His	Met	Pro	Lys 200	Leu	Arg	Thr	Phe	Arg 205	Leu	His	Ser
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Arg	Met	Asn	Leu	Phe	Gln	Lys	Glu	Val	Asp	Cys	Glu	Lys	Phe	Tyr	Ser
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Met	Val	Ser	Ser	Phe	Cys	Ile	Glu	Asn	Cys	His	Arg	Val	Glu	Ser	Leu
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Ser	Leu	Gly	Phe	Leu	His	Asn	Met	Pro	Lys	Glu	Glu	Glu	Glu	Glu	Glu
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355					360					365					
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Ser	His	Cys	Cys	Trp	Asp	Leu	Ser	Thr	Leu	Leu	Thr	Ser	Ser	Gln	Ser
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115						120					125				
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Gly	Arg	Arg	Trp	Arg	Glu	Ile	Ser	Ala	Ser	Leu	Leu	Tyr	Gln	Ala	Leu
145					150					155					160
Pro	Ser	Ser	Pro	Asp	His	Glu	Ser	Pro	Ser	Gln	Glu	Ser	Pro	Asn	Ala
				165					170					175	
Pro	Thr	Ser	Thr	Ala	Val	Leu	Gly	Ser	Trp	Gly	Ser	Pro	Pro	Gln	Pro
			180				185						190		
Ser	Leu	Ala	Pro	Arg	Glu	Gln	Glu	Ala	Pro	Gly	Thr	Gln	Trp	Pro	Leu
	195						200					205			
Asp	Glu	Thr	Ser	Gly	Ile	Tyr	Tyr	Thr	Glu	Ile	Arg	Glu	Arg	Glu	Arg
	210					215					220				
Glu	Lys	Ser	Glu	Lys	Gly	Arg	Pro	Pro	Trp	Ala	Ala	Val	Val	Gly	Thr
225					230					235					240
Pro	Pro	Gln	Ala	His	Thr	Ser	Leu	Gln	Pro	His	His	His	Pro	Trp	Glu
				245					250					255	
Pro	Ser	Val	Arg	Glu	Ser	Leu	Cys	Ser	Thr	Trp	Pro	Trp	Lys	Asn	Glu
			260				265						270		
Asp	Phe	Asn	Gln	Lys	Phe	Thr	Gln	Leu	Leu	Leu	Leu	Arg	Pro	His	
	275						280					285			
Pro	Arg	Ser	Gln	Asp	Pro	Leu	Val	Lys	Arg	Ser	Trp	Pro	Asp	Tyr	Val
	290					295					300				
Glu	Glu	Asn	Arg	Gly	His	Leu	Ile	Glu	Ile	Arg	Asp	Leu	Phe	Gly	Pro
305					310					315					320
Gly	Leu	Asp	Thr	Gln	Glu	Pro	Arg	Ile	Val	Ile	Leu	Gln	Gly	Ala	Ala
				325					330					335	
Gly	Ile	Gly	Lys	Ser	Thr	Leu	Ala	Arg	Gln	Val	Lys	Glu	Ala	Trp	Gly
			340					345					350		
Arg	Gly	Gln	Leu	Tyr	Gly	Asp	Arg	Phe	Gln	His	Val	Phe	Tyr	Phe	Ser
			355				360					365			
Cys	Arg	Glu	Leu	Ala	Gln	Ser	Lys	Val	Val	Ser	Leu	Ala	Glu	Leu	Ile
	370					375					380				
Gly	Lys	Asp	Gly	Thr	Ala	Thr	Pro	Ala	Pro	Ile	Arg	Gln	Ile	Leu	Ser
385					390					395					400
Arg	Pro	Glu	Arg	Leu	Leu	Phe	Ile	Leu	Asp	Gly	Val	Asp	Glu	Pro	Gly
				405					410					415	
Trp	Val	Leu	Gln	Glu	Pro	Ser	Ser	Glu	Leu	Cys	Leu	His	Trp	Ser	Gln
			420				425						430		
Pro	Gln	Pro	Ala	Asp	Ala	Leu	Leu	Gly	Ser	Leu	Leu	Gly	Lys	Thr	Ile
			435				440					445			



Val	Ile	Glu	Gly	Arg	Gln	His	Arg	Ser	Thr	Trp	Ser	Pro	Thr	Met	Val
770						775					780				
Val	Leu	Phe	Arg	Trp	Val	Pro	Val	Thr	Asp	Ala	Tyr	Trp	Gln	Ile	Leu
785					790				795						800
Phe	Ser	Val	Leu	Lys	Val	Thr	Arg	Asn	Leu	Lys	Glu	Leu	Asp	Leu	Ser
				805					810					815	
Gly	Asn	Ser	Leu	Ser	His	Ser	Ala	Val	Lys	Ser	Leu	Cys	Lys	Thr	Leu
				820				825					830		
Arg	Arg	Pro	Arg	Cys	Leu	Leu	Glu	Thr	Leu	Arg	Leu	Ala	Gly	Cys	Gly
		835					840					845			
Leu	Thr	Ala	Glu	Asp	Cys	Lys	Asp	Leu	Ala	Phe	Gly	Leu	Arg	Ala	Asn
						855					860				
Gln	Thr	Leu	Thr	Glu	Leu	Asp	Leu	Ser	Phe	Asn	Val	Leu	Thr	Asp	Ala
					870					875					880
Gly	Ala	Lys	His	Leu	Cys	Gln	Arg	Leu	Arg	Gln	Pro	Ser	Cys	Lys	Leu
				885					890					895	
Gln	Arg	Leu	Gln	Leu	Val	Ser	Cys	Gly	Leu	Thr	Ser	Asp	Cys	Cys	Gln
			900					905					910		
Asp	Leu	Ala	Ser	Val	Leu	Ser	Ala	Ser	Pro	Ser	Leu	Lys	Glu	Leu	Asp
							920					925			
Leu	Gln	Gln	Asn	Asn	Leu	Asp	Asp	Val	Gly	Val	Arg	Leu	Leu	Cys	Glu
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Gly	Leu	Arg	His	Pro	Ala	Cys	Lys	Leu	Ile	Arg	Leu	Gly	Leu	Asp	Gln
					950					955					960
Thr	Thr	Leu	Ser	Asp	Glu	Met	Arg	Gln	Glu	Leu	Arg	Ala	Leu	Glu	Gln
				965					970					975	
Glu	Lys	Pro	Gln	Leu	Leu	Ile	Phe	Ser	Arg	Arg	Lys	Pro	Ser	Val	Met
			980					985				990			
Thr	Pro	Thr	Glu	Gly	Leu	Asp	Thr	Gly	Glu	Met	Ser	Asn	Ser	Thr	Ser
							1000					1005			
Ser	Leu	Lys	Arg	Gln	Arg	Leu	Gly	Ser	Glu	Arg	Ala	Ala	Ser	His	
						1015					1020				
Val	Ala	Gln	Ala	Asn	Leu	Lys	Leu	Leu	Asp	Val	Ser	Lys	Ile	Phe	
						1030					1035				
Pro	Ile	Ala	Glu	Ile	Ala	Glu	Glu	Ser	Ser	Pro	Glu	Val	Val	Pro	
						1045					1050				
Val	Glu	Leu	Leu	Cys	Val	Pro	Ser	Pro	Ala	Ser	Gln	Gly	Asp	Leu	
						1060					1065				
His	Thr	Lys	Pro	Leu	Gly	Thr	Asp	Asp	Asp	Phe	Trp	Gly	Pro	Thr	
						1075					1080				
Gly	Pro	Val	Ala	Thr	Glu	Val	Val	Asp	Lys	Glu	Lys	Asn	Leu	Tyr	

1085	1090	1095
Arg Val His Phe Pro Val Ala 1100	Gly Ser Tyr Arg Trp 1105	Pro Asn Thr 1110
Gly Leu Cys Phe Val Met Arg 1115	Glu Ala Val Thr Val 1120	Glu Ile Glu 1125
Phe Cys Val Trp Asp Gln Phe 1130	Leu Gly Glu Ile Asn 1135	Pro Gln His 1140
Ser Trp Met Val Ala Gly Pro 1145	Leu Leu Asp Ile Lys 1150	Ala Glu Pro 1155
Gly Ala Val Glu Ala Val His 1160	Leu Pro His Phe Val 1165	Ala Leu Gln 1170
Gly Gly His Val Asp Thr Ser 1175	Leu Phe Gln Met Ala 1180	His Phe Lys 1185
Glu Glu Gly Met Leu Leu Glu 1190	Lys Pro Ala Arg Val 1195	Glu Leu His 1200
His Ile Val Leu Glu Asn Pro 1205	Ser Phe Ser Pro Leu 1210	Gly Val Leu 1215
Leu Lys Met Ile His Asn Ala 1220	Leu Arg Phe Ile Pro 1225	Val Thr Ser 1230
Val Val Leu Leu Tyr His Arg 1235	Val His Pro Glu Glu 1240	Val Thr Phe 1245
His Leu Tyr Leu Ile Pro Ser 1250	Asp Cys Ser Ile Arg 1255	Lys Glu Leu 1260
Glu Leu Cys Tyr Arg Ser Pro 1265	Gly Glu Asp Gln Leu 1270	Phe Ser Glu 1275
Phe Tyr Val Gly His Leu Gly 1280	Ser Gly Ile Arg Leu 1285	Gln Val Lys 1290
Asp Lys Lys Asp Glu Thr Leu 1295	Val Trp Glu Ala Leu 1300	Val Lys Pro 1305
Gly Asp Leu Met Pro Ala Thr 1310	Thr Leu Ile Pro Pro 1315	Ala Arg Ile 1320
Ala Val Pro Ser Pro Leu Asp 1325	Ala Pro Gln Leu Leu 1330	His Phe Val 1335
Asp Gln Tyr Arg Glu Gln Leu 1340	Ile Ala Arg Val Thr 1345	Ser Val Glu 1350
Val Val Leu Asp Lys Leu His 1355	Gly Gln Val Leu Ser 1360	Gln Glu Gln 1365
Tyr Glu Arg Val Leu Ala Glu 1370	Asn Thr Arg Pro Ser 1375	Gln Met Arg 1380
Lys Leu Phe Ser Leu Ser Gln 1385	Ser Trp Asp Arg Lys 1390	Cys Lys Asp 1395

Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His Leu Ile Met  
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Glu Leu Trp Glu Lys Gly Ser Lys Lys Gly Leu Leu Pro Leu Ser  
1415 1420 1425

Ser

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<400> 12

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tctcccgagc tectgaggtc acatgcgtgg tggtagacgt aagccacgaa gacctgagg 180  
tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg 240  
aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact 300  
ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca acccccatcg 360  
agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc 420  
catcccgga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct 480  
atccaagcga catgccgtg gagggggaga gcaatgggca gccggagaac aactacaaga 540  
ccacgcctcc cgtgctggac tccgacggct ccttcttct ctacagcaag ctacaccgtg 600  
acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat gaggtctgct 660  
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<400> 14

Leu Lys Asp Ile Pro Asn Leu Thr Ala Leu Val Arg Leu Glu

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1          5          10

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<212> PRT
<213> Homo sapiens

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1          5          10

<210> 16
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<400> 16

Glu Thr Val Pro Ser Asn Thr Thr Cys Cys Ala Arg Cys His
1          5          10

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Pro Pro Thr Asp Leu Asn Val Thr Glu Gly Met Ala Ala Glu
1          5          10

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Asn Trp Leu Thr Pro Asn Gly Thr Leu Met Thr His Gly Ser
1          5          10

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<212> PRT
<213> Homo sapiens

<400> 19

His Asp Gly Thr Leu Asn Phe Thr Asn Val Thr Val Gln Asp
1          5          10

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<212> PRT
<213> Homo sapiens

<400> 20

Thr Leu Asn Phe Thr Asn Val Thr Val Gln Asp Thr Gly Gln
1          5          10

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 <213> Homo sapiens

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Leu Met Thr His Gly Ser Tyr Arg Val Arg Ile Ser Val  
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<210> 28  
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<400> 28

Leu Gln Pro Arg Gly Thr Glu Lys Glu Pro Pro Gly Pro  
 1 5 10

<210> 29  
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<400> 29

Ala Pro Ala Pro Arg Ser Ser Arg Pro Thr Glu Lys Ala  
 1 5 10

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<400> 30

Arg Ser Ser Arg Pro Thr Glu Lys Ala Phe Thr Val Pro  
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<210> 31  
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<400> 31

Asp Asp Val Met Lys Thr Thr Lys Ile Ile Ile Gly Cys  
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<210> 32  
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<400> 32

Lys Ser Leu Glu Glu Leu Asn Leu Ser His Asn Asn Leu Met Ser Leu  
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Pro His Asp Leu Phe Thr Pro Leu His Arg Leu Glu Arg Val His Leu



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Ala Gly Gly Thr Gly Ser Gly Gly Gly Gly Pro Gly Gly Ser  
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<210> 34  
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 agaaggaagg cggcgccggc gcgaggcgcc ggggccggac ggcaggcggg cgcaggcgca 180  
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 cgctccccc cagcgggcct tgcaccccaa attcctgagc ctcttgggg gggtcctccc 360  
 cccacgggcc gggcatgctg ccccccgaa ggaacccctc tctctgctca cgatctcgac 420  
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 ggggcctggg cgcagggaga ggcccagcgg aagccaagcc accaggcccc ccagcgtcca 540  
 cgcgaggcat gaacattgag g atg gcg cgt gcc cgc ggc tcc ccg tgc ccc 591  
 Met Ala Arg Ala Arg Gly Ser Pro Cys Pro 10  
 ccg ctg ccg ccc ggt agg atg tcc tgg ccc cac ggg gca ttg ctc ttc 639  
 Pro Leu Pro Pro Gly Arg Met Ser Trp Pro His Gly Ala Leu Leu Phe 25  
 ctc tgg ctc ttc tcc cca ccc ctg ggg gcc ggt gga ggt gga gtg gcc 687  
 Leu Trp Leu Phe Ser Pro Pro Leu Gly Ala Gly Gly Gly Val Ala 40  
 gtg acg tct gcc gcc gga ggg ggc tcc ccg ccg gcc acc tcc tgc ccc 735  
 Val Thr Ser Ala Ala Gly Gly Gly Ser Pro Pro Ala Thr Ser Cys Pro 55  
 gtg gcc tgc tcc tgc agc aac cag gcc agc ccg gtg atc tgc aca ccg 783  
 Val Ala Cys Ser Cys Ser Asn Gln Ala Ser Arg Val Ile Cys Thr Arg 60 65 70  
 aga gac ctg gcc gag gtc cca gcc agc atc ccg gtc aac acg ccg tac 831

Arg 75	Asp	Leu	Ala	Glu	Val 80	Pro	Ala	Ser	Ile	Pro 85	Val	Asn	Thr	Arg	Tyr 90	
ctg Leu	aac Asn	ctg Leu	caa Gln	gag 95	aac Asn	ggc Gly	atc Ile	cag Gln	gtg Val 100	atc Ile	cgg Arg	acg Thr	gac Asp	acg Thr	ttc Phe	879
aag Lys	cac His	ctg Leu	cgg Arg 110	cac His	ctg Leu	gag Glu	att Ile	ctg Gln 115	cag Gln	ctg Leu	agc Ser	aag Lys	aac Asn 120	ctg Leu	gtg Val	927
cgc Arg	aag Lys	atc Ile 125	gag Glu	gtg Val	ggc Gly	gcc Ala	ttc Phe 130	aac Asn	ggg Gly	ctg Leu	ccc Pro	agc Ser 135	ctc Leu	aac Asn	acg Thr	975
ctg Leu	gag Glu 140	ctt Leu	ttt Phe	gac Asp	aac Asn	cgg Arg 145	ctg Leu	acc Thr	acg Thr	gtg Val 150	ccc Pro	acg Thr	cag Gln	gcc Ala	ttc Phe	1023
gag Glu 155	tac Tyr	ctg Leu	tcc Ser	aag Lys 160	ctg Leu	cgg Arg	gag Glu	ctc Leu	tgg Trp	ctg Leu 165	cgg Arg	aac Asn	aac Asn	ccc Pro	atc Ile 170	1071
gag Glu	agc Ser	atc Ile	ccc Pro	tcc Ser 175	tac Ser	gcc Ala	ttc Phe	aac Asn	cgc Arg 180	gtg Val	ccc Pro	tgc Ser	ctg Leu	cgg Arg 185	cgc Arg	1119
ctg Leu	gac Asp	ctg Leu	ggc Gly 190	gag Glu	ctc Leu	aag Lys	cgg Arg	ctg Leu 195	gaa Glu	tac Tyr	atc Ile	tgc Ser	gag Glu 200	gcg Ala	gcc Ala	1167
ttc Phe	gag Glu	ggg Gly 205	ctg Leu	gtc Val	aac Asn	ctg Leu 210	cgc Tyr	tac Leu	ctc Leu	aac Asn	ctg Leu 215	ggc Gly 215	atg Met	tgc Cys	aac Asn	1215
ctc Leu	aag Lys 220	gac Asp	atc Ile	ccc Pro	aac Asn	ctg Leu 225	acg Thr	gcc Ala	ctg Leu 230	gtg Val	cgc Arg 230	ctg Leu	gag Glu	gag Glu	ctg Leu	1263
gag Glu 235	ctg Leu	tgc Ser	ggc Gly	aac Asn 240	cgg Arg	ctg Leu	gac Asp	ctg Leu	atc Ile 245	cgc Arg 245	ccg Pro	ggc Gly	tcc Ser	ttc Phe	cag Gln 250	1311
ggt Gly	ctc Leu	acc Thr	agc Ser	ctg Arg 255	cgc Arg	aag Lys	ctg Leu	tgg Trp	ctc Leu 260	atg Met	cac His	gcc Ala	cag Gln	gta Val 265	gcc Ala	1359
acc Thr	atc Ile	gag Glu	cgc Asp 270	aac Asn	gcc Ala	ttc Phe	gac Asp	gac Asp 275	ctc Leu	aag Lys	tgc Ser	ctg Leu	gag Glu 280	gag Glu	ctc Leu	1407
aac Asn	ctg Leu	tcc Ser 285	cac His	aac Asn	aac Asn	ctg Leu	atg Met 290	tgc Ser	ctg Leu	ccc Pro	cac His	gac Asp 295	ctc Leu	ttc Phe	aac Thr	1455
ccc Pro	ctg Leu 300	cac His	cgc Arg	ctc Leu	gag Glu	cgc Arg 305	gtg Val	cac His	ctc Leu	aac Asn	cac His 310	aac Asn	ccc Pro	tgg Trp	cat His	1503
tgc Cys	aac Asn	tgc Cys	gac Asp	gtc Val	ctg Leu	tgg Trp	ctg Ser	agc Trp	tgg Trp	ctg Leu	aag Cys	gag Lys	gag Glu	acg Thr	gtg Val	1551





Asn Gln Ala Ser Arg Val Ile Cys Thr Arg Arg Asp Leu Ala Glu Val  
65 70 75 80

Pro Ala Ser Ile Pro Val Asn Thr Arg Tyr Leu Asn Leu Gln Glu Asn  
85 90 95

Gly Ile Gln Val Ile Arg Thr Asp Thr Phe Lys His Leu Arg His Leu  
100 105 110

Glu Ile Leu Gln Leu Ser Lys Asn Leu Val Arg Lys Ile Glu Val Gly  
115 120 125

Ala Phe Asn Gly Leu Pro Ser Leu Asn Thr Leu Glu Leu Phe Asp Asn  
130 135 140

Arg Leu Thr Thr Val Pro Thr Gln Ala Phe Glu Tyr Leu Ser Lys Leu  
145 150 155 160

Arg Glu Leu Trp Leu Arg Asn Asn Pro Ile Glu Ser Ile Pro Ser Tyr  
165 170 175

Ala Phe Asn Arg Val Pro Ser Leu Arg Arg Leu Asp Leu Gly Glu Leu  
180 185 190

Lys Arg Leu Glu Tyr Ile Ser Glu Ala Ala Phe Glu Gly Leu Val Asn  
195 200 205

Leu Arg Tyr Leu Asn Leu Gly Met Cys Asn Leu Lys Asp Ile Pro Asn  
210 215 220

Leu Thr Ala Leu Val Arg Leu Glu Glu Leu Glu Leu Ser Gly Asn Arg  
225 230 235 240

Leu Asp Leu Ile Arg Pro Gly Ser Phe Gln Gly Leu Thr Ser Leu Arg  
245 250 255

Lys Leu Trp Leu Met His Ala Gln Val Ala Thr Ile Glu Arg Asn Ala  
260 265 270

Phe Asp Asp Leu Lys Ser Leu Glu Glu Leu Asn Leu Ser His Asn Asn  
275 280 285

Leu Met Ser Leu Pro His Asp Leu Phe Thr Pro Leu His Arg Leu Glu  
290 295 300

Arg Val His Leu Asn His Asn Pro Trp His Cys Asn Cys Asp Val Leu  
305 310 315 320

Trp Leu Ser Trp Trp Leu Lys Glu Thr Val Pro Ser Asn Thr Thr Cys  
325 330 335

Cys Ala Arg Cys His Ala Pro Ala Gly Leu Lys Gly Arg Tyr Ile Gly  
340 345 350

Glu Leu Asp Gln Ser His Phe Thr Cys Tyr Ala Pro Val Ile Val Glu  
355 360 365

Pro Pro Thr Asp Leu Asn Val Thr Glu Gly Met Ala Ala Glu Leu Lys  
370 375 380

Cys Arg Thr Gly Thr Ser Met Thr Ser Val Asn Trp Leu Thr Pro Asn  
385 390 395 400

Gly Thr Leu Met Thr His Gly Ser Tyr Arg Val Arg Ile Ser Val Leu  
405 410 415

His Asp Gly Thr Leu Asn Phe Thr Asn Val Thr Val Gln Asp Thr Gly  
420 425 430

Gln Tyr Thr Cys Met Val Thr Asn Ser Ala Gly Asn Thr Thr Ala Ser  
435 440 445

Ala Thr Leu Asn Val Ser Ala Val Asp Pro Val Ala Ala Gly Gly Thr  
450 455 460

Gly Ser Gly Gly Gly Gly Pro Gly Gly Ser Gly Gly Val Gly Gly Gly  
465 470 475 480

Ser Gly Gly Tyr Thr Tyr Phe Thr Thr Val Thr Val Glu Thr Leu Glu  
485 490 495

Thr Gln Pro Gly Glu Glu Ala Leu Gln Pro Arg Gly Thr Glu Lys Glu  
500 505 510

Pro Pro Gly Pro Thr Thr Asp Gly Val Trp Gly Gly Gly Arg Pro Gly  
515 520 525

Asp Ala Ala Gly Pro Ala Ser Ser Ser Thr Thr Ala Pro Ala Pro Arg  
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Ser Arg Val Ile Cys Thr Arg Arg Asp Leu Ala Glu Val
1                5                10

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Val Ile Arg Thr Asp Thr Phe Lys His Leu Arg His Leu
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Phe Asn Arg Val Pro Ser Leu Arg Arg Leu Asp Leu Gly
1                5                10

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Phe Gln Gly Leu Thr Ser Leu Arg Lys Leu Trp Leu Met
1                5                10

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Leu Met Thr His Gly Ser Tyr Arg Val Arg Ile Ser Val
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Ala Pro Ala Pro Arg Ser Ser Arg Pro Thr Glu Lys Ala  
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Arg Ser Ser Arg Pro Thr Glu Lys Ala Phe Thr Val Pro  
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Asp Asp Val Met Lys Thr Thr Lys Ile Ile Ile Gly Cys  
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Lys Ser Leu Glu Glu Leu Asn Leu Ser His Asn Asn Leu Met Ser Leu  
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Ala Gly Gly Thr Gly Ser Gly Gly Gly Gly Pro Gly Gly Ser  
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Ala Ala Ala Val Ala Ser Gly Gly Gly Val Gly Gly Asp Ser  
1 5 10

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Tyr Ser Ser Asn Pro Ser Gly Gly Gly Cys Gly Gly Lys Gly  
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<210> 58  
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<400> 58

Met Lys Leu Leu Trp Gln Val Thr Val His His His Thr Trp Asn Ala  
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Ile Leu Leu Pro Phe Val Tyr Leu Thr Ala Gln Val Trp Ile Leu Cys  
20 25 30

Ala Ala Ile Ala Ala Ala Ala Ser Ala Gly Pro Gln Asn Cys Pro Ser  
35 40 45

Val Cys Ser Cys Ser Asn Gln Phe Ser Lys Val Val Cys Thr Arg Arg  
50 55 60

Gly Leu Ser Glu Val Pro Gln Gly Ile Pro Ser Asn Thr Arg Tyr Leu  
65 70 75 80

Asn Leu Met Glu Asn Asn Ile Gln Met Ile Gln Ala Asp Thr Phe Arg  
85 90 95

His Leu His His Leu Glu Val Leu Gln Leu Gly Arg Asn Ser Ile Arg  
100 105 110

Gln Ile Glu Val Gly Ala Phe Asn Gly Leu Ala Ser Leu Asn Thr Leu  
115 120 125

Glu Leu Phe Asp Asn Trp Leu Thr Val Ile Pro Ser Gly Ala Phe Glu  
130 135 140

Tyr Leu Ser Lys Leu Arg Glu Leu Trp Leu Arg Asn Asn Pro Ile Glu  
145 150 155 160

Ser Ile Pro Ser Tyr Ala Phe Asn Arg Val Pro Ser Leu Met Arg Leu

165										170					175				
Asp	Leu	Gly	Glu	Leu	Lys	Lys	Leu	Glu	Tyr	Ile	Ser	Glu	Gly	Ala	Phe				
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Glu	Gly	Leu	Phe	Asn	Leu	Lys	Tyr	Leu	Asn	Leu	Gly	Met	Cys	Asn	Ile				
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Lys	Asp	Met	Pro	Asn	Leu	Thr	Pro	Leu	Val	Gly	Leu	Glu	Glu	Leu	Glu				
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Met	Ser	Gly	Asn	His	Phe	Pro	Glu	Ile	Arg	Pro	Gly	Ser	Phe	His	Gly				
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Ala	Phe	Asp	Gly	Leu	Ala	Ser	Leu	Val	Glu	Leu	Asn	Leu	Ala	His	Asn				
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Asn	Leu	Ser	Ser	Leu	Pro	His	Asp	Leu	Phe	Thr	Pro	Leu	Arg	Tyr	Leu				
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Val	Glu	Leu	His	Leu	His	His	Asn	Pro	Trp	Asn	Cys	Asp	Cys	Asp	Ile				
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Leu	Trp	Leu	Ala	Trp	Trp	Leu	Arg	Glu	Tyr	Ile	Pro	Thr	Asn	Ser	Thr				
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Cys	Cys	Gly	Arg	Cys	His	Ala	Pro	Met	His	Met	Arg	Gly	Arg	Tyr	Leu				
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Val	Glu	Val	Asp	Gln	Ala	Ser	Phe	Gln	Cys	Ser	Ala	Pro	Phe	Ile	Met				
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Asp	Ala	Pro	Arg	Asp	Leu	Asn	Ile	Ser	Glu	Gly	Arg	Met	Ala	Glu	Leu				
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Lys	Cys	Arg	Thr	Pro	Pro	Met	Ser	Ser	Val	Lys	Trp	Leu	Leu	Pro	Asn				
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Gly	Thr	Val	Leu	Ser	His	Ala	Ser	Arg	His	Pro	Arg	Ile	Ser	Val	Leu				
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Asn	Asp	Gly	Thr	Leu	Asn	Phe	Ser	His	Val	Leu	Leu	Ser	Asp	Thr	Gly				
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Val	Tyr	Thr	Cys	Met	Val	Thr	Asn	Val	Ala	Gly	Asn	Ser	Asn	Ala	Ser				
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Ala	Tyr	Leu	Asn	Val	Ser	Thr	Ala	Glu	Leu	Asn	Thr	Ser	Asn	Tyr	Ser				
		435			440						445								
Phe	Phe	Thr	Thr	Val	Thr	Val	Glu	Thr	Thr	Glu	Ile	Ser	Pro	Glu	Asp				
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Thr	Thr	Arg	Lys	Tyr	Lys	Pro	Val	Pro	Thr	Thr	Ser	Thr	Gly	Tyr	Gln				
		465			470						475			480					
Pro	Ala	Tyr	Thr	Thr	Ser	Thr	Thr	Val	Leu	Ile	Gln	Thr	Thr	Arg	Val				
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[illegible]

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gctgcggggg caaaggcccg cctggcctca actocatcca cgaacctctg ctcttcaaga 180
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